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| ART UNIT | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------|----------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/003,682 | HOMMEL, GUNTER |
| | Examiner | Art Unit |
| | Ryan M Flandro | 3679 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on _____.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-39 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-39 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 10 August 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on 11/02/2000. It is noted, however, that applicant has not filed a certified copy of the DE 100 54 205.0 application as required by 35 U.S.C. 119(b).

Information Disclosure Statement

2. The information disclosure statement filed 03/05/2002 *fails* to comply with 37 CFR 1.98(a)(1), which requires a list of all patents, publications, or other information submitted for consideration by the Office. It has been placed in the application file, but the information referred to therein has not been considered. Specifically, although the IDS cover sheet and foreign references submitted for consideration have been indexed in the file, the PTO-form 1449 is missing.

Drawings

3. The drawings were received on 08/10/2004. These drawings are unacceptable. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application for the reasons cited in the attached Notice of Draftsperson's Patent Drawing Review (PTO-948). Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Objections

4. Claims 4, 11, 20, 27 and 28 are objected to because of the following informalities:
 - a. Claims 4 and 11. Recitation of the "inner diameter of the first section coinciding with an outer diameter of the bolt" should be changed to "substantially coinciding" because the inner diameter of the first section will not, in view of applicant's disclosure, be exactly the same as the outer diameter of the bolt.
 - b. Claim 20. Recitation of "the first component" should be "a first component" since no such component is previously recited.
 - c. Claim 27. Recitation of "the radial shoulder" should be "the inner shoulder" for consistency with that recited in claim 17.
 - d. Claim 28. Recitation of "the intermediate section of the bolt" should be "an intermediate section of the bolt" because no such intermediate section is previously recited.
 - e. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 11, 14, 15, 17, 18, 20, 22, 23, 27, 29-36 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Camuffo (US 5,040,917).

a. Claim 1. Camuffo shows and discloses a device **8** that attaches a first component **2** to a second component **1**, comprising a sleeve **5** positioned in the first component **2** and being axially fixed in the first component (when assembled); and a bolt **3** positioned in the sleeve **5**, and having a threaded front end **3a** that projects outwardly from the sleeve **5** for screwing into a mating thread of the second component **1**, and which *can be* screwed into the sleeve **5** with a slight radial play and held supported against axial forces, wherein the bolt **3** has a recess **3c** in its axial section accommodated in the sleeve **5** and a spring lock washer **6** located in the recess **3c**, whereby as the bolt **3** is axially introduced into the sleeve **5**, the spring lock washer **6** is pressed radially by this sleeve **5** into the recess **3c** and engages radially behind an inner shoulder (transition area between sections **11** and **12**) of the sleeve **5** for axial support (see generally figures 2 and 3; columns 1-3).

The Examiner notes that the last 3 lines of claim 1 recite product-by-process limitations. Importantly, the claim is not limited to the manipulations of the recited steps, only the structure implied by the steps. See MPEP § 2113. Camuffo shows and discloses the implied structure and, accordingly, anticipates the claim as set forth above.

b. Claim 11. Camuffo further shows and discloses the sleeve **5** has a rear first section **11** in the direction of introduction of the bolt **3** (i.e., downward in the figure) and an adjoining front second section **12**; an inner diameter of the first section **11** coinciding with an outer diameter of the bolt **3**; an inner diameter of the second section **12** being expanded relative to the inner diameter of the first section **11**, and an inner shoulder of the sleeve **5** is formed by a transition from the first section **11** to the second section **12** (see figures 2 and 3).

c. Claim 17. Camuffo shows and discloses an attachment device **8**, comprising a substantially cylindrical sleeve **5** having a hollow interior portion with a first interior section **11**, an adjacent second interior section **12**, and an inner shoulder (transition therebetween); an elongated bolt **3** that fits in the sleeve **5**; a recess **3c** formed on a portion of the bolt **3**; and an elastic member **6** disposed in the recess **3c**, wherein the elastic member **6** radially compresses inwardly in response to the bolt **3** being disposed in the first interior section **11** and wherein the elastic member **6** radially decompresses outwardly to enable the elastic member **6** to engage the inner shoulder in response to the bolt **3** being disposed in the second interior section **12** (see figures 2 and 3; columns 1-3).

The Examiner notes that the last 5 lines of claim 17 recite product-by-process limitations. Importantly, the claim is not limited to the manipulations of the recited steps, only the structure implied by the steps. See MPEP § 2113. Camuffo shows and discloses the implied structure and, accordingly, anticipates the claim as set forth above.

d. Claim 18. Camuffo further shows the inner shoulder is formed at a transition between the first interior section **11** and the adjacent second interior section **12** (see figures 2 and 3).

e. Claim 20. Camuffo further shows a portion of the sleeve **5** securely engages a portion of [a] first component **2** (see figures 2 and 3).

f. Claim 22. Camuffo further shows the first interior section **11** has a first interior diameter and the second interior section **12** has a second interior diameter (see figures 2 and 3).

- g. Claim 23. Camuffo further shows the first interior diameter is smaller than the second interior diameter (see figures 2 and 3).
- h. Claim 27. Camuffo further shows the bolt 3 includes a stop shoulder (sloped front portion of recess 3c adjacent threaded portion 3a) and wherein the radial [inner?] shoulder cooperates with the stop shoulder to apply approximately equal and oppositely directed forces on the elastic member 6 to retain the bolt 3 at the predetermined position (see figures 2 and 3; column 2 lines 50-56).
- i. Claim 29. Camuffo further shows the bolt 3 further includes an engagement head 3a or 3' formed on an end thereof (see figures 2 and 3).
- j. Claim 30. Camuffo further shows the bolt 3 further includes an engagement member 3a formed at all end thereof that releasably engages a first component 2 coupled to a second component 7 by the bolt 3 (see figures 2 and 3).
- k. Claim 31. Camuffo further shows the engagement member 3a includes a threaded portion (see figures 2 and 3).
- l. Claim 32. Camuffo further shows the elastic member 6 as a spring steel split ring (see column 2 lines 50-56).
- m. Claims 15 and 34. Camuffo further shows the sleeve 5, the bolt 3, and the spring lock washer 6 are made of steel (see figures 2 and 3 – crosshatching denotes metal).
- n. Claim 35. Camuffo shows and discloses an attachment device 8, comprising an elongated bolt 3; means 5 for accepting the elongated bolt 3; an elastic member 6 disposed on the bolt 3; means 3c for retaining the elastic member 6 formed on the bolt 3; means (transition between sleeve 5 sections 11 and 12) for engaging the elastic member

6, wherein the elastic member 6 radially compresses in response to the bolt 3 being disposed in a first interior section 11 of the means 5 for accepting the bolt 3 and wherein the elastic member 6 radially decompresses and is engaged in response to the bolt 3 being disposed in a second interior section 12 of the means 5 for accepting the bolt 3 (see figures 2 and 3; columns 1-3).

Again, the Examiner notes that the last 5 lines of claim 35 recite product-by-process limitations. Importantly, the claim is not limited to the manipulations of the recited steps, only the structure implied by the steps. See MPEP § 2113. Camuffo shows and discloses the implied structure and, accordingly, anticipates the claim as set forth above.

- o. Claim 36. Camuffo further shows the means for engaging the elastic member 6 is formed at a transition between the first interior section 11 and the second interior section 6 (see figures 2 and 3).
- p. Claims 14, 33 and 39. Camuffo further shows the sleeve 5 being a deep drawn part (see figures 2 and 3). The Examiner notes that the method of forming the device is not germane to the issue of patentability of the device itself.

7. Claims 35, 36 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Acres (US 3,221,794).

- a. Claim 35. Acres shows and discloses an attachment device comprising an elongated bolt 10; means 34 for accepting the elongated bolt 10; an elastic member 26 disposed on the bolt 10; means 20-24 for retaining the elastic member 26 formed on the bolt 10;

means 40 for engaging the elastic member 26, wherein the elastic member 26 radially compresses in response to the bolt 10 being disposed in a first interior section 36 of the means 34 for accepting the bolt 10 and wherein the elastic member 26 radially decompresses and is engaged in response to the bolt 10 being disposed in a second interior section 38 of the means 34 for accepting the bolt 10 (see figures 1-5; columns 1-6 generally).

- b. Claim 36. Acres further shows and discloses the means 40 for engaging the elastic member 26 is formed at a transition between the first interior section 36 and the second interior section 38 (see figures 3-5; columns 4-6).
- c. Claim 39. Acres further includes the means 34 for accepting the bolt 10 is a deep drawn part. The Examiner notes that the method of forming the device is not germane to the issue of patentability of the device itself.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
9. Claims 2-4, 10, 13, 16 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Camuffo, as applied above, in view of Wenger (US 3,812,756) and Acres.

a. Claim 2. As set forth above, Camuffo shows and discloses the bolt **3** having a recess **3c** thereon. Camuffo lacks disclosure that the recess **3c** includes a rear deep section in a direction of introduction of the bolt and a front flat section adjoining the rear deep section; a radial depth of the rear deep section corresponding to a radial material thickness of the spring lock washer, and a radial depth of the flat section corresponding to approximately half of the radial material thickness of the spring lock washer.

Wenger, however, teaches a device (see figures 3a,3b,10,11,13-15,17 and 19-21, and *especially figure 5*) including a bolt **10** which has recess **20** including a rear deep section **b** in a direction of introduction of the bolt **10** and a front flat section **c** adjoining the rear deep section **b**; a radial depth of the rear deep section **b** corresponding to a radial material thickness of a spring lock washer **21**, and a radial depth of the flat section **c** corresponding to approximately half of the radial material thickness of the spring lock washer **21** in order to allow a bolt with a locking means thereon to pass into a workpiece, such locking means being automatically operative once the bolt is fully inserted (see also column 1 lines 13-22; column 2 lines 10-62; column 4 line 38 – column 5 line 47; column 6 line 65 – column 7 line 7; column 8 lines 48-67; column 9 lines 28-30; column 9 line 59 – column 10 line 24; column 11 lines 33-44).

Similarly, Acres teaches a device including a bolt **10** which has recess **20** including a rear deep section **21** in a direction of introduction of the bolt **10** and a front flat section **22** adjoining the rear deep section **21**; a radial depth of the rear deep section **21** corresponding to a radial material thickness of a spring lock washer **26**, and a radial depth of the flat section **22** corresponding to approximately half of the radial material

thickness of the spring lock washer 26 in order to "provide a captive fastener having a novel groove configuration for wholly or partially receiving a retaining ring" to easily and effectively secure together two components (see figures 1-5; columns 1-6, especially column 1 line 40 – column 2 line 32).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the structure of the bolt groove 3c in Camuffo to include a rear deep section and a front flat section with the recited depths in order to provide a captive fastener which will wholly contain a retaining ring during assembly and after installation will only partially contain such retaining ring so as to lock the fastener to that through which it extends as taught by both Wenger and Acres.

b. Claims 3 and 10. Wenger further teaches the recess 20 includes a stop shoulder a formed on a rear end in the direction of introduction of the bolt 10 and a support shoulder (*see figure 5*) formed on a front end T, the stop shoulder a and the support shoulder each being located in a plane perpendicular to the axis of the bolt 10.

Acres also teaches the recess 20 includes a stop shoulder 23 formed on a rear end in the direction of introduction of the bolt 10 and a support shoulder 24 formed on a front end, the stop shoulder 23 and the support shoulder 24 each being located in a plane perpendicular to the axis of the bolt 10 (*see figure 1*).

c. Claim 4. Camuffo further shows and discloses the sleeve 5 has a rear first section 11 in the direction of introduction of the bolt 3 and an adjoining front second section 12; an inner diameter of the first section 11 coinciding with an outer diameter of the bolt 3; an inner diameter of the second section 12 being expanded relative to the inner diameter of

the first section **11**, and an inner shoulder of the sleeve **5** is formed by a transition from the first section **11** to the second section **12** (see figure 3).

d. Claim 13. Camuffo specifically shows that the member into which the bolt is inserted may be a sleeve **5**. Wenger further teaches the bolt **10** has a rear first shank section **S** in the direction of introduction that includes an outer diameter coinciding with the inner diameter of a first section of the member **32** into which it is inserted, and a front second shank section **T** that is separated from the first shank section **S** by the recess **20** having an outer diameter that is reduced relative to the outer diameter of the first shank section **S** to aid in assembly (see figure 5).

e. Claim 16. Camuffo further shows and discloses that the spring lock washer **6** includes an axial slot and that the member into which the bolt **3** is inserted is a sleeve **5**. Each of Wenger and Acres, *respectively*, teach that the spring lock washer **21 or 6** includes an axial slot (see figure 2 in both references), and that an outer diameter of the spring lock washer **21 or 6** in an unstressed state is equal to an inner diameter of a second section **38** of the member into which the bolt **10** is inserted, and a material thickness of the spring lock washer **21 or 6** and a width of the slot being dimensioned to compress the spring lock washer **21 or 6** to an outer diameter which is smaller than an inner diameter of a first section **32a or 36** of the member into which the bolt **10** is inserted.

f. Claim 28. Camuffo, as applied to claims 17 and 27 above, lacks disclosure that the recess includes a rear deep section formed adjacent to the stop shoulder and a conically expanding section that tapers outwardly from the rear deep section to substantially match an outer diameter of the intermediate section of the bolt.

Nevertheless, Wenger teaches a recess **20** includes a rear deep section **b** formed adjacent to the stop shoulder **a** and a conically expanding section **c** that tapers outwardly from the rear deep section **b** to substantially match an outer diameter of [an?] intermediate section of the bolt **10** in order to allow a bolt with a locking means thereon to pass into a workpiece, such locking means being automatically operative once the bolt is fully inserted (see figures 3a,3b,10,11,13,14,17 and 19-21; see *especially* column 4 line38 – column 5 line 47).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a rear deep section formed adjacent to the stop shoulder and a conically expanding section that tapers outwardly from the rear deep section to substantially match an outer diameter of an intermediate section of the bolt in order to allow a bolt with a locking means thereon to pass into a workpiece, such locking means being automatically operative once the bolt is fully inserted as taught by Wenger.

10. Claims 1-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knohl (US 5,244,325) in view of Wenger (US 3,812,756) and Acres.
 - a. Claim 1. Knohl shows and discloses a device that attaches a first component **21** to a second component **22**, comprising a sleeve **36** positioned in the first component **21** and being axially fixed in the first component **21**; and a bolt **35** positioned in the sleeve **36**, and having a threaded front end **45** that projects outwardly from the sleeve **36** for screwing into a mating thread **23** of the second component **22**, and which *can be* screwed into the sleeve **36** with a slight radial play and held supported against axial forces,

wherein the bolt **35** has a spring lock washer **55** therearound (see generally figures 2-6, 9 and 10; columns 1-4).

Knohl lacks disclosure that the bolt **35** has a recess in its axial section accommodated in the sleeve and a spring lock washer located in the recess, whereby as the bolt is axially introduced into the sleeve, the spring lock washer is pressed radially by this sleeve into the recess and engages radially behind an inner shoulder of the sleeve for axial support. The Examiner notes that the last 3 lines of claim 1 recite product-by-process limitations. Importantly, the claim is not limited to the manipulations of the recited steps, only the structure implied by the steps. See MPEP § 2113.

Wenger, however, teaches a device having a bolt **10** having a recess **20** and a spring lock washer **21** located in the recess **20**, whereby as the bolt **10** is axially introduced into a member **32**, the spring lock washer **21** is pressed radially by this member **32** into the recess **20** and engages radially behind an inner shoulder of the member for axial support in order to allow a bolt with a locking means thereon to pass into a workpiece, such locking means being automatically operative once the bolt is fully inserted (see figures 3a,3b,10,11,13-15,17 and 19-21, and *especially figure 5*; see also column 1 lines 13-22; column 2 lines 10-62; column 4 line 38 – column 5 line 47; column 6 line 65 – column 7 line 7; column 8 lines 48-67; column 9 lines 28-30; column 9 line 59 – column 10 line 24; column 11 lines 33-44).

Likewise, Acres teaches a device having a bolt **10** having a recess **20** and a spring lock washer **26** located in the recess **20**, whereby as the bolt **10** is axially introduced into a member **42**, the spring lock washer **26** is pressed radially by this member **42** into the

recess **20** and engages radially behind an inner shoulder **40** of the member **42** for axial support in order to "provide a captive fastener having a novel groove configuration for wholly or partially receiving a retaining ring" to easily and effectively secure together two components (see figures 1-5; columns 1-6, especially column 1 line 40 – column 2 line 32).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a bolt having a recess and a spring lock washer located in the recess, whereby as the bolt is axially introduced into a member, the spring lock washer is pressed radially by this member into the recess and engages radially behind an inner shoulder of the member for axial support in order to allow a bolt with a locking means thereon to pass into a workpiece, such locking means being automatically operative once the bolt is fully inserted as taught by both Wenger and Acres.

b. Claim 2. Wenger further teaches a device (see figures 3a,3b,10,11,13-15,17 and 19-21, and *especially figure 5*) including a bolt **10** which has recess **20** including a rear deep section **b** in a direction of introduction of the bolt **10** and a front flat section **c** adjoining the rear deep section **b**; a radial depth of the rear deep section **b** corresponding to a radial material thickness of a spring lock washer **21**, and a radial depth of the flat section **c** corresponding to approximately half of the radial material thickness of the spring lock washer **21** in order to allow a bolt with a locking means thereon to pass into a workpiece, such locking means being automatically operative once the bolt is fully inserted (see also column 1 lines 13-22; column 2 lines 10-62; column 4 line 38 – column 5 line 47;

column 6 line 65 – column 7 line 7; column 8 lines 48-67; column 9 lines 28-30; column 9 line 59 – column 10 line 24; column 11 lines 33-44).

Similarly, Acres teaches a device including a bolt **10** which has recess **20** including a rear deep section **21** in a direction of introduction of the bolt **10** and a front flat section **22** adjoining the rear deep section **21**; a radial depth of the rear deep section **21** corresponding to a radial material thickness of a spring lock washer **26**, and a radial depth of the flat section **22** corresponding to approximately half of the radial material thickness of the spring lock washer **26** in order to “provide a captive fastener having a novel groove configuration for wholly or partially receiving a retaining ring” to easily and effectively secure together two components (see figures 1-5; columns 1-6, especially column 1 line 40 – column 2 line 32).

c. Claims 3 and 10. Wenger further teaches the recess **20** includes a stop shoulder **a** formed on a rear end in the direction of introduction of the bolt **10** and a support shoulder (*see figure 5*) formed on a front end **T**, the stop shoulder **a** and the support shoulder each being located in a plane perpendicular to the axis of the bolt **10**.

Acres also teaches the recess **20** includes a stop shoulder **23** formed on a rear end in the direction of introduction of the bolt **10** and a support shoulder **24** formed on a front end, the stop shoulder **23** and the support shoulder **24** each being located in a plane perpendicular to the axis of the bolt **10** (*see figure 1*).

d. Claims 4 and 11. Knohl further shows the sleeve **36** has a rear first section **49** in the direction of introduction of the bolt **35** and an adjoining front second section **48**; an inner diameter **60** of the first section **49** coinciding with an outer diameter of the bolt **35**; an

inner diameter of the second section **48** being expanded relative to the inner diameter of the first section **49**, and an inner shoulder **60** (bottom) of the sleeve **36** is formed by a transition from the first section **49** to the second section **48** (see figure 6).

e. Claims 5 and 12. Knohl further shows at a rear end of the sleeve **36** in the direction of introduction of the bolt **35**, the sleeve **36** includes a collar **49** that projects radially outward, and an end section **50** at a front end of the sleeve **36** having a reduced wall thickness that can be flanged outward (reduced wall thickness as a result of bend deductions inherent in the bent portion) (see figures 5-6).

f. Claims 6 and 13. Knowl specifically shows that the member into which the bolt is inserted may be a sleeve **36**. Wenger additionally teaches the bolt **10** has a rear first shank section **S** in the direction of introduction that includes an outer diameter coinciding with the inner diameter of a first section of the member **32** into which it is inserted, and a front second shank section **T** that is separated from the first shank section **S** by the recess **20** having an outer diameter that is reduced relative to the outer diameter of the first shank section **S** to aid in assembly (see figure 5).

g. Claims 9 and 16. Knohls further shows and discloses that the spring lock washer **55** includes an axial slot (see column 3 line 61 – column 4 line 6) and that the member into which the bolt **35** is inserted is a sleeve **36**. Each of Wenger and Acres, *respectively*, teach that the spring lock washer **21 or 6** includes an axial slot (see figure 2 in both references), and that an outer diameter of the spring lock washer **21 or 6** in an unstressed state is equal to an inner diameter of a second section **38** of the member into which the bolt **10** is inserted, and a material thickness of the spring lock washer **21 or 6** and a width

of the slot being dimensioned to compress the spring lock washer 21 or 6 to an outer diameter which is smaller than an inner diameter of a first section 32a or 36 of the member into which the bolt 10 is inserted.

h. Claim 17. Knohl shows and discloses an attachment device, comprising a substantially cylindrical sleeve 36 having a hollow interior portion with a first interior section 49, an adjacent second interior section 48, and an inner shoulder 60; an elongated bolt 35 that fits in the sleeve 36; an elastic member 55 disposed on the bolt 35 (see generally figures 2-6, 9 and 10; columns 1-4).

Knohls lacks disclosure of a recess formed on a portion of the bolt; and the elastic member disposed in the recess, wherein the elastic member radially compresses inwardly in response to the bolt being disposed in the first interior section and wherein the elastic member radially decompresses outwardly to enable the elastic member to engage the inner shoulder in response to the bolt being disposed in the second interior section.

Wenger, however, teaches a device having a bolt 10 having a recess 20 formed on a portion thereof; an elastic member 21 disposed in the recess 20, wherein the elastic member 21 radially compresses inwardly in response to the bolt 10 being disposed in the first interior section 32a and wherein the elastic member 21 radially decompresses outwardly to enable the elastic member 21 to engage a shoulder in order to allow a bolt with a locking means thereon to pass into a workpiece, such locking means being automatically operative once the bolt is fully inserted (see figures 3a,3b,10,11,13-15,17 and 19-21, and *especially figure 5*); see also column 1 lines 13-22; column 2 lines 10-62; column 4 line 38 – column 5 line 47; column 6 line 65 – column 7 line 7; column 8 lines

48-67; column 9 lines 28-30; column 9 line 59 – column 10 line 24; column 11 lines 33-44).

Likewise, Acres teaches a device having a bolt **10** having a recess **20** formed in a portion thereof and an elastic member **26** disposed in the recess **20**, wherein the elastic member **26** radially compresses inwardly in response to the bolt **10** being disposed in the first interior section **36** and wherein the elastic member **26** radially decompresses outwardly to enable the elastic member **26** to engage the inner shoulder **40** in response to the bolt **10** being disposed in the second interior section **38** in order to “provide a captive fastener having a novel groove configuration for wholly or partially receiving a retaining ring” to easily and effectively secure together two components (see figures 1-5; columns 1-6, especially column 1 line 40 – column 2 line 32).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a recess formed on a portion of the bolt; and the elastic member disposed in the recess, wherein the elastic member radially compresses inwardly in response to the bolt being disposed in the first interior section and wherein the elastic member radially decompresses outwardly to enable the elastic member to engage the inner shoulder in response to the bolt being disposed in the second interior section in order to allow a bolt with a locking means thereon to pass into a workpiece, such locking means being automatically operative once the bolt is fully inserted as taught by both Wenger and Acres.

- i. Claim 18. Acres further teaches the inner shoulder **40** is formed at a transition between the first interior section **36** and the adjacent second interior section **38**.

- j. Claim 19. Knohl further shows the sleeve **36** further includes a collar **49** formed on an end thereof to conformingly contact a first component **21** (see figures 2 and 3).
- k. Claim 20. Knohl further shows a portion **49** of the sleeve **36** securely engages a portion of the first component **21** (see figures 2 and 3).
- l. Claim 21. Knohl further shows the portion **49** of the sleeve **36** is constructed and arranged to expand outward in a radial direction to engage the first component **21**.
- m. Claims 22 and 23. Knohl shows the first interior section **60** has a first interior diameter and the second interior section **48** has a second interior diameter (see figures 5, 6, 9, 10). Acres also teaches the first interior section **36** has a first interior diameter and the second interior section **38** has a second interior diameter. Both Knohls and Acres further shows the first interior diameter being smaller than the second interior diameter.
- n. Claim 24. Knohl further shows the sleeve **36** further includes a third portion **50** having a third interior diameter greater than the second portion **48**, the third portion being adjacent to the second portion (see figures 5, 6, 9, 10).
- o. Claim 25. Knohl further shows the third portion **50** extends into at least a portion of the first component **21** (see figures 2 and 3).
- p. Claim 26. Knohl further shows and discloses the third portion **50** is constructed and arranged to expand radially outward to securely attach the sleeve **36** to the first component **21** (see figures 2 and 3).
- q. Claim 27. Wenger further teaches the bolt **10** includes a stop shoulder **a** and wherein the [inner?] shoulder (end of **32**) cooperates with the stop shoulder **40** to apply

approximately equal and oppositely directed forces on the elastic member **21** to retain the bolt **10** at a predetermined position (see figures 3a and 3b).

Acres further teaches the bolt **10** includes a stop shoulder **24** and wherein the [inner?] shoulder **40** cooperates with the stop shoulder **40** to apply approximately equal and oppositely directed forces on the elastic member **26** to retain the bolt **10** at a predetermined position (see figures 1-5).

- r. Claim 28. Wenger further teaches the recess **20** includes a rear deep section **b** formed adjacent to the stop shoulder **a** and a conically expanding section **c** that tapers outwardly from the rear deep section **b** to substantially match an outer diameter of an intermediate section of the bolt **10** (see figures 3a,3b,10,11,13-15,17 and 19-21).
- s. Claim 29. Knowls further shows the bolt **35** further includes an engagement head **42** formed on an end thereof.
- t. Claims 30 and 31. Knohl further shows the bolt **35** includes a threaded engagement member **45** formed at all end thereof that releasably engages a first component **21** coupled to a second component **22** by the bolt **35** (see figures 2 and 3).
- u. Claim 32. Knohl further shows the elastic member **55** is a spring steel split ring (see column 3 line 61 – column 4 line 7). Acres and Wenger also shows such members **26** and **21**, respectively.
- v. Claim 35. Knowl shows and discloses an attachment device, comprising an elongated bolt **35**; means for accepting the elongated bolt **36**; an elastic member **55** disposed on the bolt **35**; means **42,45** for retaining the elastic member **55** formed on the bolt **35**; means **60** for engaging the elastic member **55**.

Knohl lacks explicit disclosure of the elastic member **55** radially compressing inwardly in response to the bolt being disposed in a first interior section of the means **36** for accepting the bolt **35** and wherein the elastic member radially decompresses outwardly to enable the elastic member to engage the inner shoulder in response to the bolt being disposed in a second interior section of the means **36** for accepting the bolt **35**.

Wenger, however, teaches a device having a bolt **10** having a recess **20** formed on a portion thereof; an elastic member **21** disposed in the recess **20**, wherein the elastic member **21** radially compresses inwardly in response to the bolt **10** being disposed in the first interior section **32a** and wherein the elastic member **21** radially decompresses outwardly to enable the elastic member **21** to engage a shoulder in order to allow a bolt with a locking means thereon to pass into a workpiece, such locking means being automatically operative once the bolt is fully inserted (see figures 3a,3b,10,11,13-15,17 and 19-21, and *especially figure 5*); see also column 1 lines 13-22; column 2 lines 10-62; column 4 line 38 – column 5 line 47; column 6 line 65 – column 7 line 7; column 8 lines 48-67; column 9 lines 28-30; column 9 line 59 – column 10 line 24; column 11 lines 33-44).

Likewise, Acres teaches a device having a bolt **10** having a recess **20** formed in a portion thereof and an elastic member **26** disposed in the recess **20**, wherein the elastic member **26** radially compresses inwardly in response to the bolt **10** being disposed in the first interior section **36** and wherein the elastic member **26** radially decompresses outwardly to enable the elastic member **26** to engage the inner shoulder **40** in response to the bolt **10** being disposed in the second interior section **38** in order to “provide a captive

fastener having a novel groove configuration for wholly or partially receiving a retaining ring” to easily and effectively secure together two components (see figures 1-5; columns 1-6, especially column 1 line 40 – column 2 line 32).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a recess formed on a portion of the bolt; and the elastic member disposed in the recess, wherein the elastic member radially compresses inwardly in response to the bolt being disposed in the first interior section and wherein the elastic member radially decompresses outwardly to enable the elastic member to engage the inner shoulder in response to the bolt being disposed in the second interior section in order to allow a bolt with a locking means thereon to pass into a workpiece, such locking means being automatically operative once the bolt is fully inserted as taught by both Wenger and Acres.

w. Claim 36. Knohl shows that the means **60** for engaging the elastic member **55** is formed at a transition between the first interior section **49** and the second interior section **48**.

Likewise, Acres teaches means **40** for engaging the elastic member **26** is formed at a transition between the first interior section **36** and the second interior section **38**.

x. Claim 37. Knohl further shows the means **36** for accepting the bolt **35** further includes means **49 or 50** for being securely engaged to a portion of a first component **21**.

y. Claim 38. Knohl further shows the bolt **35** includes means **45** for releasably engaging a second component **22** (see figures 2-3).

z. Claims 7, 14,33, 39. Knowles further includes the means **36** for accepting the bolt **35** is a deep drawn part. The Examiner notes that the method of forming the device is not germane to the issue of patentability of the device itself.

aa. Claims 8, 15, 34. Knohls further shows the sleeve **36**, the bolt **35** and the spring lock washer **55** are made of steel.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with respect to captive fasteners:

U.S. Patent 6,309,157 to Amann et al. (see figure 4a)

U.S. Patent 6,309,156 to Schneider (see figure 1a)

U.S. Patent 5,630,611 to Goss et al. (see figures 3-8 – in sequence)

U.S. Patent 5,489,177 to Schmidt, Jr.

U.S. Patent 4,975,008 to Wagner

U.S. Patent 3,080,184 to Hays

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan M Flandro whose telephone number is (703) 305-6952. The examiner can normally be reached on 9:00am- 6:00pm Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on (703) 308-2686. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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December 21, 2004



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